

Literature Review: High Volume Fly Ash Concrete

V. S. Anugraha¹, M. K. Kamalakkannan², Dr. E. K. Mohanraj³

PG Student, Civil Engineering, Nandha Engineering College, Erode, India¹

Assistant Professor, Civil Engineering, Nandha Engineering College, Erode, India²

Professor, Civil Engineering, Nandha Engineering College, Erode, India³

anugrahavijayakumar@gmail.com¹, kamalakkannan.m.k@nandhaengg.org², Mohanraj.krishnasamy@nandhaengg.org³

Abstract: *The construction industry is experiencing immense pressure for substitutes for traditional building materials in the modern world. In the first half of 2020–2021, just under 57.93 percent of the total amount of fly ash generated in the nation was reused. The remaining material was thrown away of in landfills, spewing toxic substances into the immediate vicinity. Numerous creative proposals have been put forward all around the world that aim to increase the average amount of fly ash utilized during constructing. The most promising domains are geo polymer and high volume fly ash concrete construction. This study encompasses the research undertaken on each of these areas by an assortment of professionals internationally. Their attempts paid off, yielding concrete that exhibited barely any heat accumulation during its hydration process negligible sagging, enhanced versatility, and a modest dense utilizing a great deal of ash from fly ashes. The outcomes derived from geo polymer concrete construction comprised outstanding durability, acidic obstructions, plus an elevated fly ash content, with characteristics analogous with that from Rcc constituents. Furthermore, the a project-specific strategy prescription is anticipated to be generated*

Keywords: Fly ash, Geo polymer, High volume concrete, and Alkali-activated concrete

REFERENCES

- [1]. Edward G. Moffatt, Michael D.A. Thomas, Andrew Fahim(2017),“Performance of high-volume fly ash concrete in marine environment”, Cement and Concrete Research,Vol.102,pp.127-135.
- [2]. Anthina Vairavan and Dharma (2015) “Experimental Study on geo polymer Concrete under Daylight Curin”, International Journal of Science Technology & Engineering,Vol. 03, Issue 08, pp. 159 – 163.
- [3]. Bakharev, T., Sanjayan, J. G. and Cheng, Y. B., 2003, “Resistance of alkali-activated slag concrete to acid attack”, Cement and Concrete Research, Vol.33(1),pp. 1607–1612.
- [4]. Brooke, N. J., L. M. Keyte, et al. (2005). “Seismic Performance of „Green Concrete“ Interior Beam-Column Joints”, Australian Structural Engineering Conference, Newcastle, Australia.
- [5]. Cengiz Duran Atis (2002) “Heat evolution of high-volume fly ash concrete”, Cement and Concrete Research, Vol.32, pp.75-756.
- [6]. Chung-Ho Huang , Shu-Ken Lin , Chao-Shun Chang , How-Ji Chen(2013) „Mix proportions and mechanical properties of concrete containing very high-volume of Class F fly ash“, Construction and BuildingMaterials,Vol.46,pp.71-78
- [7]. Douglas, E., Bilodeau, A. and Malhotra, V. M., 1992, “Properties and durability of alkali activated slag concrete”, ACI Materials Journal, Vol89(5), pp. 509–516.
- [8]. Obada Kayali, M.Sharfuddin Ahmed (2013), “Assessment of high volumereplacement fly ash concrete – Concept of performance index”, Construction and Building Materials, Vol. 39, pp.7176.
- [9]. Palomo, A.; Fernandez-Jimenez, A; Criado, M. (2004). “Geo polymers:One Only Chemical Basis, Some Different Microstructures”, Materials de Construcción,Vol. 54 (275),pp. 77-91
- [10]. Prabir Kumar Sarker, (2008), “Analysis of geo polymer concrete columns”,Materials and Structures, Vol: 42, Issue: 6, pp. 715-724.
- [11]. Rangan, B. V, and Hardijto, D, [2005], “Development and properties of low calcium fly ash based geo polymer concrete”, Research report GC-1, Faculty of Engineering, Curtin University of Technology, Perth, Australia.

- [12]. Rawaz Kurda, Jorge de Brito, Jose D. Silvestre(2017), “influence of recycled aggregates and high volume contents of fly ash on concrete freshproperties”, Cement and Concrete Composites, Vol 84,pp.198 – 213.